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09/121,175	07/22/1998	RICHARD B. MERRILL	FOV-011	3033

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EXAMINER

YE, LIN

ART UNIT PAPER NUMBER

2612

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/121,175

Applicant(s)

MERRILL ET AL.

Examiner

Lin Ye

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 and 31-59 is/are pending in the application.
- 4a) Of the above claim(s) 10-27, 37-54, 58 and 59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 28, 29, 31-36 and 55-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 6, 7, 15, 16, 206 ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Species of Figure 5 which read on claims 1-9, 28-29, 31-36 and 55-57 in Paper No. 18 filed on May 13, 2002 is acknowledged.
2. Applicants elect claims 25-27 and 52-54 in Paper No. 18 filed on May 13, 2002. The claims 25 and 52 includes a limitation “ **a column bias line**” which read on Figure 10, but does not read on Figure 5. Because applicant did not correctly meet the restriction requirement, the election has been treated as an election nonresponsive. The claims 25-27 and 52-54 withdrawn from further consideration pursuant to 37 CFR 1.142(a) as being drawn to a nonelected Species, there being no allowable generic or linking claim.
3. Applicants also elect claims 21-24 and 48-51 in Paper No. 18 filed on May 13, 2002. The claims 21 and 48 includes a limitation “ **a plurality of row select lines**” which read on Figures 6 and 9, but does not read on Figure 5. Because applicant did not correctly meet the restriction requirement, the election has been treated as an election nonresponsive. The claims 21-24 and 48-51 withdrawn from further consideration pursuant to 37 CFR 1.142(a) as being drawn to a nonelected Species, there being no allowable generic or linking claim.
4. Claims 10-20, 37-47, 58 and 59 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 18 filed on May 13, 2002.

### *Response to Arguments*

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5. Applicant's arguments with respect to claims 1-9, 28-29, 31-36 and 55-57 filed on May 6, 2003 have been considered but are moot in view of the new ground(s) of rejection.

### *Specification*

6. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "**means**" and "**said**," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### *Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-5, 28-29, 31-32 and 55-57 are rejected under 35 U.S.C. 102(e) as being anticipated by Booth Jr. U.S. Patent 6,078,037.

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Referring to claim 1, the Booth reference discloses in Figures 2-4, an active pixel sensor (pixel 60, See Col 2, lines 65-67 and Col. 3, lines 1-5) disposed on a semiconductor substrate, comprising a photosensor (light sensitive element 10) having a first terminal and a second terminal, said first terminal coupled to a first reference potential; a reset transistor (transistor 12) having a first terminal coupled to said second terminal of said photosensor, a second terminal coupled to a reset potential, and a third terminal coupled to a reset line (See Figure 2); a plurality of transfer transistors (transistors 34, 44, 54...), each transfer transistor having a first terminal directly connected to said second terminal of said photosensor, a second terminal, and a third terminal connected to a transfer line; and a plurality of storage nodes (nodes 32, 42, 52...), each storage node coupled to a separate one of said second terminals of said plurality of transfer transistors (transistors 34, 44, 54...) as shown in Figure 2 (See Col. 2, lines 26-56).

Referring to claim 2, an active pixel sensor (pixel 60) further including means coupled to plurality of storage nodes (nodes 32, 42, 52...) for outputting a value from any of said plurality of storage nodes (See Col. 2, lines 26-56).

Referring to claim 3, an active pixel sensor (pixel 60) includes a plurality of transfer lines, wherein each of plurality of transfer lines is connected to a separate one of said third terminal of said plurality of transfer transistors (transistors 34, 44, 54...) as shown in Figure 2.

Referring to claim 4, an active pixel sensor (pixel 60) wherein each separate one of said plurality of storage nodes (nodes 32, 42, 52...) is coupled to said means for outputting a value from any of said plurality of storage nodes by a separate one of a plurality of readout

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transistors (transistors 38, 48, 58...) having a first terminal connected to said separate one of said plurality of storage nodes, a second terminal coupled to a second potential, and a third terminal connected to said means for outputting a value from any of said plurality of storage nodes as shown in Figure 2.

Referring to claim 5, an active pixel sensor (pixel 60) further including a plurality of storage elements (36, 46, 56...), each separate one of said storage elements having a first terminal coupled to separate one of said storage nodes (nodes 32, 42, 52...), and a second terminal coupled to second reference potential as shown in Figure 2.

Referring to claim 6, an image-sensing array (62) is provided with photosensitive areas (64) made up of rows and columns (NxM) of active pixel sensors (pixel 60). Inherently, each active pixel sensor includes a plurality row select transistors and coupled to a row select line for receiving address signal to act as a switch to allow output signals related to the value and node to appear at the readout circuit. The active pixel sensor (pixel 60) includes a plurality of column output lines (B1,B2, BN...).

Referring to claim 28, the Booth reference discloses in Figures 2-4, an active pixel sensor (pixel 60, See Col 2, lines 65-67 and Col. 3, lines 1-5) disposed on a semiconductor substrate, comprising a photosensor (light sensitive element 10) having a first terminal and a plurality of second terminals, said first terminal coupled to a first reference potential; a reset transistor (transistor 12) having a first terminal coupled to said at least one of said plurality of second terminals of said photosensor, a second terminal coupled to a reset potential, and a third terminal coupled to a reset line (See Figure 2); a plurality of transfer transistors (transistors 34, 44, 54...), each transfer transistor having a first terminal directly connected to

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a separate one of said plurality of second terminals of said photosensor, a second terminal, and a third terminal connected to a transfer line; and a plurality of storage nodes (nodes 32, 42, 52...), each said plurality of storage nodes coupled to a separate one of said second terminals of said plurality of transfer transistors (transistors 34, 44, 54...) as shown in Figure 2 (See Col. 2, lines 26-56).

Referring to claim 29 is considered substantively equivalent to claim 2 discussed above.

Referring to claim 31 is considered substantively equivalent to claim 4 discussed above.

Referring to claim 32 is considered substantively equivalent to claim 5 discussed above.

Referring to claim 55, the Booth reference discloses in Figure 4, a method of operating an active pixel sensor (60) having a photosensor (10), a reset transistor (12), a plurality of storage nodes (nodes 32, 42, 52...) coupled to said photosensor and means coupled to said plurality of storage nodes for outputting a value from any of said plurality of storage nodes comprising: turning on the reset transistor to place a reset potential on said photosensor; transferring charge from said photosensor to a first of the plurality of storage nodes for a first duration; transferring charge from said photosensor to a second of the plurality of storage nodes for a second duration(See Col. 3, lines 45-48); outputting charge from any of the plurality of storage nodes which is not having charge transferred from said photosensor, wherein said outputting of charge occurs during the transferring of charge as shown in Figure 4 (the readout at function block 122 ways after the SAMPLE is deasserted and the ISA reset, thereby ending the capture period) (See Col. 3, 50-66).

Referring to claim 56 the Booth reference discloses wherein said first duration commences coincident with said second duration (See Col. 4, lines 9-20).

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Referring to claim 57 the Booth reference discloses wherein said second duration commences after said first duration has ended (See Col. 3, lines 45-49).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6-9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Booth Jr. U.S. Patent 6,078,037 in view of Merrill et al. U.S. Patent 5,962,844.

Referring to claim 6, the Booth reference disclose all subject matter as discussed in respected claims 1-2, and also an image-sensing array (62) is provided with photosensitive areas (64) made up of rows and columns (NxM) of active pixel sensors (pixel 60); the active pixel sensor (pixel 60) includes a plurality of column output lines (B1, B2, BN...); except the reference does not explicitly show a plurality of row select transistors connected to a row select line.

The Merrill reference discloses in Figures 8A, 4 and 3, an active pixel sensor (400) includes each separate one of said plurality of storage nodes is coupled to said means for outputting a value from any of said plurality of storage nodes by a separate one of a plurality of readout transistors (414 & 416, Col. 8, line 66) having a first terminal connected to said separate one of said plurality of storage nodes, a second terminal coupled to a second potential, and a third terminal connected to said means for outputting a value from any of



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said plurality of storage nodes ; a plurality of column output lines (202 & 204); a row select line (128); and a plurality of row select transistors ( $n_3$  and  $n_5$ ), each of said row select transistors having a first terminal coupled to one of said plurality of storage nodes, a second terminal coupled to one of said plurality of column output lines, and a third terminal coupled to said row select line (See Col. 8, lines 66-67). The Merrill reference is an evidence that one of ordinary skill in the art at the time to see more advantages for an active pixel image cell has one of row select transistors to connect with separate one of said plurality of storage nodes and a row select line, because the row select transistors act as a switch to allow output signals related to the value and node to appear at the readout circuit and simultaneously generate as pixel output the signals required for determining the difference between the pixel output and increase the speed with which images can be acquired. For that reason, it would have been obvious to see the active pixel sensor (60) includes a plurality of row select transistors, each of said row select transistors having a first terminal coupled to one of said plurality of storage nodes, a second terminal coupled to one of said plurality of column output lines, and a third terminal coupled to said row select line disclosed by Booth.

Referring to claim 7, the Booth reference discloses the active pixel sensor (pixel 60) further including a plurality of transfer lines, wherein each separate one of said plurality of storage nodes (nodes 32, 42, 52...) is coupled to said second terminal of said photosensor by a separate one of a plurality of transfer transistors having first terminal connected to said second terminal of said photosensor, a second terminal connected to said separate one of said plurality of storage nodes, and a third terminal connected to a separate one of said plurality of transfer lines as shown in Figure 2.

Referring to claim 8, the Merrill reference discloses an active pixel sensor (400) has wherein each separate one of said plurality of storage nodes (node 1 & 2 with storage elements 410 & 412) is coupled to said first terminal of a separate one of said plurality of row select transistors (418) by a separate one of a plurality of readout transistors having a first terminal connected to said separate one of said plurality of storage nodes, a second terminal coupled to a second potential, and a third terminal coupled to said first terminal of said separate one of said plurality of row select transistors.

Referring to claim 9, the Booth reference discloses the active pixel sensor (pixel 60) further including a plurality of storage elements (36, 46, 56...), each separate one of said storage elements having a first terminal coupled to a separate one of said storage elements having a first terminal coupled to a separate one of said storage nodes, and a second terminal coupled to a second reference potential as shown in Figure 2.

Referring to claim 33 is considered substantively equivalent to claim 6 discussed above.

Referring to claim 34 is considered substantively equivalent to claim 7 discussed above.

Referring to claim 35 is considered substantively equivalent to claim 8 discussed above.

Referring to claim 36 is considered substantively equivalent to claim 9 discussed above.

### *Conclusion*

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Lin Ye** whose telephone number is **(703) 305-3250**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929.

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**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks


Washington, DC. 20231

Or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive,  
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding  
should be directed to the Technology Center 2600 Customer Service Office whose telephone  
number is (703) 306-0377.

  
WENDY R. GARBER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

Lin Ye  
May 30, 2003